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DIVISION
ACTIVITIES

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Division

PROCEEDINGS OF THE



**AMERICAN SOCIETY
OF CIVIL ENGINEERS**

1. The first part of the report discusses the general situation of the country and the progress of the work in the various departments. It also mentions the results of the work done in the past year.

2. The second part of the report deals with the work done in the various departments during the year. It mentions the results of the work done in the different branches of the service and the progress made in the various departments.

DIVISION ACTIVITIES

PIPELINE DIVISION

Proceedings of the American Society of Civil Engineers

NEWS

June, 1958

We now have 283 division members and a Journal mailing list of 332. The committee workers (with recent reductions) total 118, or allowing for duplication, a total of 107 persons. The following news items of committee activities are taken from reports made by the various committee chairmen.

TECHNICAL COMMITTEES

PIPELINE LOCATION - A joint task committee on Pipeline Location, to report on the preparation of a Manual, has been appointed with Chairman Earnest O. Scott, Service Pipe Line Co., Tulsa; James C. Faulkner, Texas Eastern Transmission Corp., Shreveport; and John F. Schaffer, El Paso Natural Gas Co., El Paso. The Surveying & Mapping Division appointed Professor Milton O. Schmidt, University of Illinois, Urbana, and Robert H. Dodds of Biggs & Hill, Inc., New York City, to serve on this committee.

PIPELINE CROSSINGS OF RAILROADS & HIGHWAYS - a well-attended meeting was held in Columbus, Ohio, on April 9-11, 1958. In order to have a draft of the specifications ready for distribution to the committee by July 1, a special task group with Messrs. E. F. Trunk, E. A. Slade, George D. Mock, and D. A. Roach will hold necessary meetings to edit the draft.

Supplementing activities of this committee, Natural Gas Pipeline Co. of America initiated on Dec. 30, 1957, a casing study program to measure comparatively the amount of casing deflection under load conditions and with the load removed. This casing was not removed until this spring when comparative results were obtained. The study forms are being revised to accumulate important information and this research program procedure will be made available when the membership is requested to make similar studies on other companies' casings when possible.

Joe E. Thompson, chairman of the committee, was asked by the American Gas Association to present the views of the Gas Pipeline industry on a panel discussion sponsored by the Fourth Annual Seminar of the American Right-of-Way Association in San Francisco on May 28. The subject of the discussion was "Policies and Procedures of Bureau of Public Roads on Utility Relocation Reimbursement."

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PIPELINE DESIGN, SPECIFICATIONS & OPERATING STANDARDS - a meeting was held in Chicago on February 27. The Task Committee on Compilation of a Reference Bibliography with M. J. Shelton, Chairman, will prepare the material presently accumulated for publication as an interim report for inclusion in our Journal. This bibliography is limited to a list of texts, manuals, periodicals, codes, standards, as well as technical libraries and research agencies through which an engineer interested in a specialized phase of the pipeline field could obtain detailed information as required. In addition, there will be a listing of industry associations, professional organizations and technical committees active in the pipeline field, including names and addresses. The Task Committee on Production of Technical Papers, David R. Jenkins, Chairman, will stimulate the production of papers by soliciting reports on unusual projects from pipeline companies and ASCE members. A panel discussion program will be featured at a future convention meeting. The Task Committee on Investigation of Governmental Regulation of Pipeline Design and Construction is collecting all available information on this subject for review and study as to desirability of publication or any additional action. Recommendations have been made to the Executive Committee for a proposed joint task group to compile information on standard forms for pipeline construction contracts and specifications. The Executive Committee is also considering a change in title of Mr. Shea's committee with a rewording of "purpose" to reduce the area of conflict and duplication of assignments of other division committees.

Several months ago our Division was requested for our points of view regarding the newly created offices of critical tables of the National Research Council. We asked for advice by letters to all technical committee chairmen. Chairman Carter L. Shea promptly answered that he had done some hurried checking and thinking on the subject of research problems in our field and suggested the following as possible areas for investigation. Mr. Shea's letter is quoted:

1. Determination of Volume of Liquid Contained in a Pipe Line Operating Under High Pressure.

In the operation of our multiple products pipe lines it is essential to know, for purposes of dispatching, leak detection, and stock accounting, the volume of liquid contained in the pipe line. Our basic method is to accurately meter all inputs and offtakes. This operation is complicated by a number of factors which require adjustment or correction such as:

- a) Compressibility of the various liquids as they are subjected to varying pressures within the pipe.
- b) Temperature variations within the contained liquids.
- c) Variations in the diameter of the pipe resulting from elastic deformation under varying conditions of internal pressure.
- d) Variations in the diameter of the pipe as the result of thermal expansion and contraction of the steel.

Many of these factors may appear insignificant when considered individually; however, it has been our experience that with the increasing use of large diameter, thin wall pipe the combined effect of these changing conditions results in significant discrepancies in measurement, particularly within the

accepted accuracies of "less than 1/10 of 1%." The development of tabular data for handling the adjustment of pipe line volumes for these varying factors would provide a useful tool. To date, I believe that considerable work on compressibility tables for various hydrocarbons has been done by the API.

2. Investigation of Properties of Various Viscous Liquids under Conditions of Turbulent Flow at High Pressures.

It is my impression that operating experience to date in handling some of the heavier crude oils and other liquids which are normally quite viscous at atmospheric temperatures has indicated that the properties of viscosity and fluid friction are subject to unpredictable variations under conditions of high pressures and turbulent flow. The investigation of these properties as related to pressure and Reynolds numbers might provide useful information.

3. "Settling Out" of Suspended Fine Particles Within a Pipe Line Under Conditions of Turbulent Flow.

We have encountered various operating problems as a result of the accumulation of fine particles of foreign materials within an operating pipe line. Efforts to control this problem have led to cleaning by means of scrapers and filtering the input product to remove suspended materials. The investigation of deposition rate as related to particle size, viscosity of liquid, Reynolds number, etc. might prove quite useful. This field, of course, if particularly important in the relatively new area of pipeline transportation of solids.

4. Investigation of Heat Loss from Liquids in an Underground Pipe Line.

Our experience, on a limited scale, with the pumping of viscous liquids which require heating has indicated that the temperature loss is usually less than anticipated. This involves, of course, a number of indeterminate factors such as soil properties, moisture content, etc. However, I believe that the insulating effect of a relatively thin layer of the contained liquid along the pipe walls has an important effect. I have no knowledge of any extensive data available in this field.

5. Interfacial Mixing Within Multiple Products Pipe Lines.

This field is one in which all products pipe line operators have done independent research and have compiled data from operating experience. Our company conducted several projects, the results of which were published by API and ASME. I believe, however, that the bulk of the work has been concerned with the more common petroleum products. Further investigation and the publication of data covering a wider variety of liquids might be useful.

NOTE: Further discussion is welcomed by the Newsletter Editor.

ADMINISTRATIVE COMMITTEES

PUBLICATIONS - Chairman Robert D. Kersten invites attention to the purpose of our Pipeline Division as stated in the Official Register "to advance and correlate scientific knowledge." To this end we must all help by nominating topics and qualified authors. Please fill out and mail the questionnaire on the last page.

Any committee workers arranging for a speaker or an author can be of great help to them by advising that if their paper is prepared initially for publication, instead of for oral presentation, editing will be minimized. Please call attention to the basic requirements called for on the fly-leaf of the Journal. Papers not written in the third person are not acceptable for publication. Also, the instructions regarding presentation of mathematical data, tables, and illustrations should be closely followed. Some papers are unnecessarily delayed in editing and have required considerable revision with subsequent approval of changes by the authors.

Attention is called to the paper in the April "Civil Engineering" titled "Pipelining is Engineered Design, Construction, Maintenance and Operation" by Lewis B. Combs, Rear Admiral, CEC USN (Ret.), Head of the Department of Civil Engineering, Rensselaer Polytechnic Institute, Troy, N. Y. Admiral Combs is a member of our Advisory Group and serves as Military Liaison.

PROGRAMS - details of the Portland, Oregon, program scheduled for June 23-25, were in the May issue of "Civil Engineering." Future participation will be about every six months. At New York, October 13-17, 1958, a joint meeting with the Highway Division will be scheduled for a half-day session of 3 papers, under auspices of the Highway Division, with Donald E. Adams as our local contact program member. We will not participate in the Los Angeles convention in February 1959. At Cleveland, Ohio, May 4-8, 1959, we will high-light the coal slurry pipeline project. At Washington, D. C., October 19-23, we will cover pipeline activities of the three armed services and the industry relations with Federal regulatory bodies. A joint Conference is being arranged with the Pipeline Contractors Association in 1960. Plans for future convention programs will be announced soon. The ASCE convention schedule for 1960 is New Orleans in March, Reno in June, Boston in October; in 1961, Phoenix in April, none yet decided for summer, New York in October; and in 1962, Houston in February, Omaha in May, and Detroit in October.

EXECUTIVE COMMITTEE

The Executive Committee took action at the Chicago convention meeting on February 26, to discontinue certain committees. The chairmen and personnel of the following were informed by copies of the Minutes of the meetings that these committees were discontinued pending studies to either combine their activities with other existing committees or to re-activate these at a later date with change of personnel and specific duties: Committee on Pumping & Compressor Stations, Committee on Storage of Pipeline Fluids, Committee on Membership, and Committee on Cooperation With Local Sections. Next meeting is set for September 20-21, 1958 in New York - then in Kansas City about March 1959.

On May 1-2, at the Society's annual Technical Procedure Conference held in Memphis, Tenn., the secretary of the Pipeline Division was assigned the presentation of a report on "Expansion of Division Effectiveness Through Better Management of Committees." This conference is designed to expand the effectiveness and extent of activities of the various divisions by discussions and inter-change of information.

ACTIONS OF THE ASA SECTIONAL COMMITTEE B31

As reported in the March Newsletter, requests from individuals or companies for interpretation of a particular section of the Code for Pressure Piping B31 - Sponsor, ASME, should be addressed to the Secretary of the B31 Committee, 420 Lexington Avenue, New York 17, N. Y., who assigns these letters to the appropriate subcommittee which formulates an answer. The subcommittee involved submits the information or change to the B31 executive committee for approval and publication as a "Case."

Case No. 31, published in the January 1958 issue of "Mechanical Engineering" and the February issue of "The Magazine of Standards," is an interim action (not part of the Code until action has been taken by ASME and by ASA on approval of a revised edition) and is hereby quoted:

"Inquiry: May steel pipe produced under ASTM Spec. A 381-54 T be used in construction that must comply with ASA B31.1.8-1955, Gas Transmission and Distribution Piping Systems (Section 8 of the Code of Pressure Piping)? If so, what joint factor may be used? Reply: It is the opinion of the committee that pipe meeting the requirements of ASTM Spec. A 381-54T meets the intent of the Code and may be used under American Standard B31.1.8-1955 and with a longitudinal joint factor E equal to 1."

As listed in the ASCE 1958 Official Register, the joint representatives of the ASCE with the ASA Sectional Committee B31 (Code for Pressure Piping - Sections 1 through 7) are now Eldon V. Hunt and Carter L. Shea, both Pipeline Division committee members.

PROPOSED ASA B31.4 CODE ON OIL TRANSPORTATION PIPING

At the API annual Pipe Line Conference in New Orleans, April 1, 1958, Mr. O. W. Heyden of Shell Pipe Line Corp., Houston, reported the status of the proposed ASA B31.4 Code on Oil Transportation Piping. This Section Committee 4 plans to have a final draft soon for submission to the ASA B31 Executive and Sectional Committees and, if approved, the Code can probably be published before the end of the year.

The proposed Code "sets forth minimum engineering requirements deemed necessary for safe design and construction of piping systems. It is intended to state these requirements in terms of basic principles to the fullest possible extent, supplemented with specific requirements where necessary to obtain uniform interpretation of principle. The Code contains basic reference data and formulas necessary for design. It contains prohibitions in certain areas and in other areas contains warnings or 'flags' where caution is known to be necessary. The Code gives full consideration to safety. The designer is cautioned that the Code is not a design handbook and does not do away with the need for the engineer and competent engineering judgment. The Code shall not be made retroactive or construed as applying to piping systems erected before or under construction at the time of its approval by the ASA."

HISTORY OF ASA B31 CODE OF PRESSURE PIPING

The following information is also quoted from Mr. Heyden's report to the API:

The American Standards Association initiated Project B31 for a national Code for pressure piping in March 1926 at the request of the American Society of Mechanical Engineers with that society as sole sponsor. After several years' work by ASA Sectional Committee B31 and its subcommittees, a first edition was published in 1935 as an American Tentative Standard Code for Pressure Piping. A revision of the original tentative standard was begun in 1937 which culminated in the 1942 American Standard Code for Pressure Piping. Several supplements and revisions appeared between 1942 and 1955 when Section 8 of the Code on Gas Transmission and Distribution Piping was published as a complete and self-contained document B31.1.8-1955, and the remaining sections of the Code were printed in a single document B31.1.1-1955.

In March, 1954, the American Petroleum Institute recommended to the ASA B31 Sectional Committee that Section 3 of the Code be limited to oil piping within refinery limits, and that a new section be formulated to cover oil transportation systems. This recommendation was approved, and a new Subcommittee No. 9 (now Section Committee 4) was formed in that year to develop the proposed ASA Code on Oil Transportation Piping.

Please send your comments, suggestions, and news items of interest - deadline date for the next Newsletter is July 15.

J. B. Spangler, Newsletter Editor
c/o Transcontinental Gas Pipe Line Corp.
P. O. Box 296, Houston 1, Texas

To: COMMITTEE ON PUBLICATIONS

Prof. Robert D. Kersten, Chairman

c/o Engineering Center, Arizona State College

Tempe, Arizona

- A. I suggest the following topics for technical papers and suggest the persons indicated be contacted regarding the preparation of papers:

1. Topic _____

Author _____

Address _____

2. Topic _____

Author _____

Address _____

- B. I suggest the following persons as qualified reviewers in the indicated subject matter areas (indicated by number):

- | | |
|----------------------------|------------------------|
| 1. Alignment | 14. Products Flow |
| 2. Compressor Stations | 15. Pump Stations |
| 3. Construction Materials | 16. Railroad Crossings |
| 4. Construction Procedures | 17. Regulatory Bodies |
| 5. Crude Flow | 18. Research |
| 6. Design | 19. Right of Way |
| 7. Gas Flow | 20. Specifications |
| 8. Highway Crossings | 21. Stream Crossings |
| 9. Maintenance | 22. Storage |
| 10. Mapping | 23. Surveying |
| 11. Metering | 24. Two Phase Flow |
| 12. Operating Procedures | 25. Welding |
| 13. Pipeline Flow | |

1. Name _____

Company _____

Address _____

2. Name _____

Company _____

Address _____

3. Name _____

Company _____

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SIGNED _____

Company _____

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